Remarks

Claims 1-3, 5-7, 9-12, 14-21, 23, 24, 26-28, 30, 32, 34, 38, 40, 41, and 43-48 are pending in the application, with claims 1, 9, 15, 20, 23, 32, 38, 43, 44, 47, and 48 being the independent claims. Claims 3, 5, 9, 14, and 15 are amended to further clarify the claimed invention. These amendments are supported by the specification at least at, for example, paragraphs [0039]-[0042], and FIGs. 4A and 4B. New claim 48 is sought to be added. Claim 29 is sought to be canceled without prejudice to or disclaimer of the subject matter therein.

These amendments are believed to introduce no new matter, and their entry is respectfully requested.

The Examiner is thanked for the indication on page 9 in section 8 of the Office Action of allowance of claims 43-47. The Examiner is also thanked for the indication on page 10 in section 9 of the Office Action of the allowable subject matter found in claim 29. Claim 29 has been rewritten in independent form as new claim 48.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Rejections under 35 U.S.C. § 102

On page 2 in section 4 of the Office Action, claims 1-3, 5, 7, 9-12, 14-21, 23, 24, 32, 34, 38, and 40 were rejected as being allegedly anticipated by U.S. Patent No.

4,925,300 to Rachlin, ("Rachlin"). This rejection is traversed for the reasons stated below.

Anticipation under 35 U.S.C. § 102 requires showing the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim. See *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick*, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984).

Claims 1-8

Claim 1 recites features that distinguish it from the applied reference. For example, claim 1 recites a system for processing image data representing biometric data, the system comprising:

> a receiving module for receiving image data captured in a first, polar coordinate system; and
> a coordinate conversion module coupled to the receiving module for converting the image data captured in the first, polar coordinate system to converted image data in a second coordinate system.

Although Rachlin may disclose that "pixel data acquired from the completion of" a "scanning process can be aligned along a polar coordinate grid" after scanning "a single fingerprint pattern" (Rachlin, col. 3, lns. 38-41, col. 4, lns. 47-49, FIGs. 1 and 2), Rachlin does not teach or suggest that a coordinate conversion module is coupled to a receiving module for converting image data captured in a first, polar coordinate system to converted image data in a second coordinate system, as recited in claim 1. On pages 2 and 3 of the Office Action, the Examiner asserts that the coordinate conversion module recited in claim 1 is considered inherent within computer 17 depicted in FIG. 2 of Rachlin. Applicants respectfully disagree. No coordinate conversion module is

disclosed, suggested, or taught in Rachlin. While Rachlin may disclose that "one task of the computer 17 is to reformat" image "data along the standard cartesian coordinate grid" for a single scanned fingerprint (Rachlin, col. 4, lns. 49-51, FIG. 2), Rachlin lacks any teaching or suggestion of a coordinate conversion module coupled to a receiving module, wherein the coordinate conversion module converts image data captured in a first, polar coordinate system to converted image data in a second coordinate system, as recited in claim 1. Rachlin may disclose that a "computer receives data from a scan controller" and that a "new line of data is acquired" until "an entire image worth of data is made available for processing by the computer" (Rachlin, col. 4, lns. 42-47). However, Rachlin does not teach or suggest a system including a coordinate conversion module coupled to a receiving module for converting image data representing biometric data captured in a first, polar coordinate system to converted image data in a second coordinate system, as recited in claim 1. Applicants are unable to identify in Rachlin claim 1's recited feature of a coordinate conversion module coupled to a receiving module that captures image data in a first, polar coordinate system.

Dependent claims 2-8, which depend upon independent claim 1, are allowable for at least being dependent from allowable independent claim 1, in addition to their own respective distinguishing features. See *In Re Fine*, 837 F.2d 1071 (Fed. Cir. 1988) and M.P.E.P. § 2143.03. Accordingly, Applicants respectfully request that the rejections of claims 1-8 be removed and that these claims be passed to allowance.

Further, claim 5 recites an additional feature not taught or suggested by Rachlin. Claim 5 as amended herein recites:

> a *substantially conical prism for receiving biometric data at an exterior, convex surface*; and

> a scanning imaging system *optically coupled to the substantially conical prism* for capturing image data in a first, polar coordinate system and for communicating the image data to the receiving module. (Emphasis added)

Although Rachlin may disclose a system with a "*conical lens*" wherein "a finger or thumb is placed *in*" a concave "*conical well* and moved forward until satisfactory contact is achieved between the surface of the digit and the surface of the *well*" (Emphasis added) (Rachlin, col. 2, lns. 62-66, col. 3, ln. 65-col. 4, ln. 7), Rachlin does not teach or suggest a scanning imaging system that is optically coupled to a substantially conical prism for receiving biometric data at an exterior, convex surface, as recited in claim 5 and disclosed in Applicants' FIGs. 3, 4A, and 4B. Rachlin's system "utilizes a conical lens comprising a *tapered well*, a conical front surface" and "a *spherical focusing lens*" wherein "the axes of the *tapered well*, *conical front surface*, *spherical focusing lens*, and the axis of revolution of the photodetecting device are *all coaxial* along what shall be termed the central axis" (Emphasis added) (Rachlin, col. 2, lns. 52-61, FIG. 1). In contrast to the substantially conical prism recited in claim 5 and depicted in Applicants' FIG. 4A, Rachlin's conical lens is a concave well into which an "individual finger or thumb is placed" (Rachlin, col. 2, lns. 61-64, FIG. 1). Rachlin's system is limited to a conical lens that includes "a well" that "lies on the upper side of the conical lens, and tapers in the forward direction towards a photodetector" (Rachlin, col. 2, lns. 64-66, FIG. 1), and Rachlin does not teach or suggest that a scanning imaging system is optically coupled to a substantially conical prism for capturing image data in a first, polar coordinate system, as recited in claim 5. Further, Rachlin discloses that "*no light* reflecting off a point on the tapered well in contact with the air *finds an optical path*

out the front conical surface and through the spherical focusing lens" (Rachlin, col. 3, lns. 2-6). In contrast, claim 5 recites that a scanning imaging system is *optically coupled* to the *substantially conical prism* for capturing image data in a first, polar coordinate system and for communicating the image data to a receiving module. Accordingly, Applicants respectfully request that the rejection of claim 5 be removed and that this claim be passed to allowance.

Claims 9-14

Independent claim 9 recites features that distinguish it from the applied reference. For example, claim 9 recites a system for processing image data representing biometric data, comprising:

> a substantially conical prism for receiving biometric data at an *exterior, convex surface*;
> a scanning imaging system optically coupled to the substantially conical, prism for capturing the image data in a first coordinate system; and
> an image conversion system coupled to the scanning imaging system for converting the image data captured in the first coordinate system to converted image data in a second coordinate system.

On page 3 of the Office Action, claim 9 was rejected based on the same rationale applied to claim 5. Claim 9 recites a system with distinguishing features similar to claim 5, and thus is patentable over the applied reference for similar reasons as discussed above. As discussed above with regards to claim 5, Rachlin lacks any teaching of a substantially conical prism for receiving biometric data at an exterior, convex surface, as recited in claim 9. Accordingly, Applicants respectfully request that the rejection of claim 9 be removed and that this claim be passed to allowance.

Dependent claims 10-14, which depend upon independent claim 9, are allowable for at least being dependent from allowable independent claim 9, in addition to their own respective distinguishing features. Accordingly, Applicants respectfully request that the rejections of claims 9-14 be removed and that these claims be passed to allowance.

Claims 15-19

On page 4 of the Office Action, claim 15 was rejected based on the same rationale applied to claim 9. Claim 15 recites a system with distinguishing features similar to claims 5 and 9, and thus is patentable over the applied reference for similar reasons as discussed above.

Claim 15 recites features that distinguish it from the applied Rachlin reference. For example, claim 15 as amended herein recites a substantially conical prism for receiving biometric data at an exterior, convex surface, a scanning imaging system optically coupled to the substantially conical prism for capturing the image data in a first coordinate system, and a first image conversion system coupled to the scanning imaging system for generating and storing conversion data.

As argued above with regards to claim 5, the applied reference does not teach or suggest a substantially conical prism for receiving biometric data at an exterior, convex surface, or a scanning imaging system optically coupled to the substantially conical prism, as recited in claim 15. Accordingly, Applicants respectfully request that the rejection of claim 15 be removed and that this claim be passed to allowance.

Dependent claims 16-19, which depend upon claim 15, are allowable for at least being dependent from allowable independent claim 15, in addition to their own respective distinguishing features.

Accordingly, Applicants respectfully request that the rejections of claims 15-19 be removed and that these claims be passed to allowance.

Claims 20-22

On page 4 of the Office Action, independent claim 20 is rejected using similar rationale as applied to claim 1. Claim 20 recites a system with distinguishing features similar to claim 1, and thus is patentable over the applied reference for similar reasons as discussed above with regards to claim 1. Claim 20 recites features that distinguish it from the applied reference. For example, claim 20 recites a system for processing image data representing biometric data, wherein the system comprises:

> a conversion module configured to convert image data captured in a first, polar coordinate system to converted image data in a second coordinate system.

As discussed above with regards to claim 1, Rachlin does not teach or suggest a conversion module configured to convert image data captured in a first, polar coordinate system to converted image data in a second coordinate system, as recited in claim 20.

Accordingly, Applicants respectfully request that the rejection of claim 20 be removed and that this claim be passed to allowance.

Dependent claims 21 and 22, which depend upon claim 20, are allowable for at least being dependent from allowable independent claim 20, in addition to their own respective distinguishing features.

Claims 32 and 34

Claim 32 recites features that distinguish it from the applied reference. For example, claim 32 recites:

> capturing in the scanning and capturing system the image data in a *first, polar coordinate system*;
> communicating the captured *first, polar coordinate system* image data to the image conversion system; and
> converting the captured first, polar coordinate system image data to converted image data in a second coordinate system. (Emphasis added)

As discussed above with regards to claim 1, Rachlin does not disclose capturing in the scanning and capturing system the image data in a first, polar coordinate system; communicating the captured first, polar coordinate system image data to the image conversion system; and converting the captured first, polar coordinate system image data to converted image data in a second coordinate system, as recited in claim 32.

Dependent claim 34, which depends upon claim 32, is allowable for at least being dependent from an allowable independent claim, in addition to its own distinguishing features.

Accordingly, Applicants respectfully request that the rejections of these claims be removed and that these claims be passed to allowance.

Claims 38, 40, and 41

On page 5 of the Office Action, claim 38 is rejected under the same rationale as applied to claim 20. Claim 38 recites a system with distinguishing features similar to claim 20, and thus is patentable over the applied reference for similar reasons as discussed above with regards to claim 20. Claim 38 recites features that distinguish it

from Rachlin. For example, claim 38 recites capturing image data in a first, polar coordinate system; and converting the captured image data in the first, polar coordinate system to converted image data in a second coordinate system.

As discussed above with regards to claim 20, Rachlin does not disclose capturing the image data in a first, polar coordinate system; and converting the captured image data in the first, polar coordinate system to converted image data in a second coordinate system, as recited in claim 38.

Dependent claims 40 and 41, which depend upon claim 38, are allowable for at least being dependent from an allowable independent claim, in addition to their own respective distinguishing features.

Accordingly, Applicants respectfully request that the rejections of these claims be removed and that these claims be passed to allowance.

Rejections under 35 U.S.C. § 103

On page 6 in section 6 of the Office Action, claims 1, 9, 15, 20, 23, 26-28, 30, 38, and 41 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent No. 6,094,499 to Nakajima, *et al* ("Nakajima") in view of Rachlin. On page 9 in section 7 of the Office Action, claim 6 is rejected as being allegedly unpatentable over the applied references in view of Rachlin and further view of U.S. Patent No. 6,483,932 to Martinez *et al.* ("Martinez"). Applicants respectfully traverse for the reasons stated below.

Claim 1

Claim 1 recites features that distinguish it from the applied references. For example, claim 1 recites:

> a receiving module for receiving image data captured in a first, polar coordinate system; and
> a coordinate conversion module coupled to the receiving module for converting the image data captured in the first, polar coordinate system to converted image data in a second coordinate system.

Nakajima may disclose storage and subsequent matching of a single fingerprint scanned on a standard prism (Nakajima, col. 14, ln. 64-col. 15, ln. 18, FIG. 2). However, Nakajima lacks any teaching or suggestion of capturing image data in a first, polar coordinate system and subsequently converting the image data into a second coordinate system, as recited in claim 1. Nakajima may convert image data from a Cartesian coordinate system into a polar coordinate system (Nakajima, col. 4, lns. 51-55, col. 5, lns. 30-35, col. 18, lns. 41-59) and Rachlin may "reformat" image "data along the standard cartesian coordinate grid" (Rachlin, col. 4, lns. 49-51, FIG. 2). However, Nakajima and Rachlin, taken singly or in the allegedly obvious combination lack any teaching or suggestion of capturing image data in a first, polar coordinate system, storing the image data, and subsequently converting the image data into a second coordinate system, as recited in claim 1.

While Nakajima may disclose initial capture or registration of Fourier image data in a Cartesian coordinate system (Nakajima, col. 18, lns. 41-45), Nakajima does not disclose that a coordinate conversion module is coupled to a receiving module for converting image data captured in a first, polar coordinate system to converted image data in a second coordinate system, as recited in claim 1. In contrast to the above-recited features of claim 1, Nakajima discloses conversion of Fourier image data into a polar

coordinate system (Nakajima, col. 4, lns. 51-55, col. 5, lns. 30-35) and performing a two-dimensional Fourier transform for collation of fingerprint image data (Nakajima, col. 18, lns. 46-54, FIG. 16). However, Nakajima does not suggest that fingerprint image data is initially captured in a first, polar coordinate system and subsequently converted into a second coordinate system, as recited in claim 1.

On page 6 of the Office Action, the Examiner acknowledges that Nakajima does not disclose receiving image data that was captured in a first, polar coordinate system, as recited in claim 1. The Examiner relies on Rachlin to teach or suggest this feature. However, Rachlin does not cure these deficiencies of Nakajima with respect to claim 1. Nakajima also lacks a coordinate conversion module coupled to a receiving module, wherein the coordinate conversion module converts image data captured in a first, polar coordinate system to converted image data in a second coordinate system, as recited in claim 1. As discussed above with regards to the rejection of claim 1 under 35 U.S.C. § 102, Applicants are unable to identify a disclosure in Rachlin of a coordinate conversion module that converts image data captured in a first, polar coordinate system to converted image data in a second coordinate system. Neither Nakajima nor Rachlin, alone or in combination, teach, suggest, or disclose a coordinate conversion module coupled to a receiving module for converting the image data captured in a first, polar coordinate system to converted image data in a second coordinate system, as recited in claim 1. Thus, Rachlin does not overcome the deficiencies of Nakajima, and the combination of the applied references cannot be used to establish a *prima facie* case of obviousness.

Dependent claims 2-8 depend upon claim 1, and are therefore allowable for at least being dependent from an allowable independent claim, in addition to their own respective distinguishing features.

Claim 9

Claim 9 recites features that distinguish from the applied references. For example, claim 9 recites the system of claim 5 wherein the scanning and capturing system is coupled to the receiving module via a data network.

On page 6 of the Office Action, the Examiner acknowledges that Nakajima does not disclose a substantially conical prism, as recited in claim 9. The Examiner relies on Rachlin to teach or suggest this feature. However, as discussed above with regards to claims 5 and 9, Rachlin does not cure these deficiencies of Nakajima (as modified by Rachlin) with respect to claim 9. Applicants are unable to identify a disclosure in Rachlin of a scanning and print capturing system coupled to a receiving module via a data network. Neither Nakajima nor Rachlin, alone or in combination, teach, suggest, or disclose a scanning and print capturing system with a substantially conical prism for receiving biometric data at an exterior, convex surface, as recited in claim 9. Thus, Rachlin does not overcome the deficiencies of Nakajima with regards to claim 9, and the applied references, taken singly or in the allegedly obvious combination, fail to teach or suggest the above features of claim 9.

Therefore, the applied references cannot be used to establish a *prima facie* case of obviousness for this claim.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 9, and find it allowable over the applied references. Also, at least based on their respective dependencies to claim 9, claims 10-14 should be found allowable over the applied reference, as well as for their individual respective distinguishing features. Dependent claims 10-14, which depend upon independent claim 9, are allowable for at least being dependent from an allowable independent claim, in addition to their own respective distinguishing features. Accordingly, Applicants respectfully request this rejection be removed and that these claims be passed to allowance.

Claim 15

Claim 15 recites features that distinguish from the applied references. For example, claim 15 as amended herein recites a substantially conical prism for receiving biometric data at an exterior, convex surface, and a scanning imaging system optically coupled to the substantially conical prism for capturing the image data in a first coordinate system.

On page 7 of the Office Action, the Examiner rejects claim 15 under the same rationale as applied to claim 9. Again, Nakajima does not disclose a non-planar prism, and as discussed above Rachlin does not cure this deficiency because Rachlin lacks any teaching or disclosure of a substantially conical prism for receiving biometric data at an exterior, convex surface, as recited in amended claim 15.

Dependent claims 16-19, which depend upon independent claim 15, are allowable for at least being dependent from an allowable independent claim, in addition

to their own respective distinguishing features. Accordingly, Applicants respectfully request this rejection be removed and that these claims be passed to allowance.

Claim 20

On page 7 of the Office Action, claim 20 was rejected based on the same rationale applied to claim 1. Claim 20 recites a system with distinguishing features similar to claim 1, and thus is patentable over the applied reference for similar reasons as discussed above. Claims 21 and 22, which depend upon independent claim 20, are allowable for at least being dependent from an allowable independent claim, in addition to their own respective distinguishing features.

Claims 23, 24, 26-28, and 30

Without conceding the propriety of this rejection, Applicants herein cancel claim 29, thus obviating the rejection of this claim.

On page 7 of the Office Action, claim 23 was rejected based on the same rationale applied to claim 1. Claim 23 recites a method with distinguishing features similar to claim 1, and thus is patentable over the applied reference for similar reasons as discussed above. For example, claim 23 recites receiving the image data captured in a first, polar coordinate system, storing the captured image data, and converting the captured image data in the first, polar coordinate system to converted image data in a second coordinate system.

Accordingly, Applicants respectfully request that the rejections of claim 23 be removed and that this claim be passed to allowance.

Dependent claims 24, 26-28, and 30, which depend upon claim 23 are allowable for at least being dependent from allowable an independent claim, in addition to their own respective distinguishing features.

Accordingly, Applicants respectfully request that the rejections of these claims be removed and that these claims be passed to allowance.

Claims 32, 38, 40, and 41

On page 8 of the Office Action, claim 32 was rejected based on a similar rationale applied to claim 1. Claim 32 recites a system with features that distinguish from the applied references. For example, claim 32 recites:

> capturing in the scanning and capturing system the image data in a first, polar coordinate system;
> communicating the captured first, polar coordinate system image data to the image conversion system; and
> converting the captured first, polar coordinate system image data to converted image data in a second coordinate system.

While Nakajima may disclose registration (storing) and subsequent collation (matching) of a single fingerprint scanned on a standard prism (Nakajima, col. 14, ln. 64-col. 15, ln. 18, FIG. 2), Nakajima does not teach that image data is captured in a first, *polar* coordinate system and subsequently converted into a second coordinate system, as recited in claim 32. Although Nakajima may disclose a control unit "including a CPU, RAM, and a hard disk CPU, a ROM 20-2, a RAM 20-3, a hard disk (HD) 20-4, a frame memory (FM) 20-5, an external connection section (I/F) 20-6, and a *Fourier transform* section" (Emphasis added) (Nakajima, col. 8, lns. 17-21, FIG. 2), Nakajima does not teach or suggest capturing image data in a first, polar coordinate system, communicating the captured first, polar coordinate system image data to an image conversion system;

and converting the captured first, polar coordinate system image data to converted image data in a second coordinate system, as recited in claim 32.

Accordingly, Applicants respectfully request that the rejections of claim 32 be removed and that this claim be passed to allowance.

Claim 34, which depends upon independent claim 32, is allowable for at least being dependent from an allowable independent claim, in addition to its own distinguishing features.

On page 8 of the Office Action, claim 38 was rejected based on the same rationale applied to claim 1. Claim 38 recites a method with distinguishing features similar to claim 1, and thus is patentable over the applied reference for similar reasons as discussed above.

Claims 40 and 41, which depend upon independent claim 38, are allowable for at least being dependent from an allowable independent claim, in addition to their own respective distinguishing features.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejections of these claims, and find them allowable over the applied references.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present Application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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